REMARKS

Claims 11, 13-19, and 21-25 are now pending in this application. Claims 11, 13-16, 18, and 19 have been amended. Claims 12 and 20 have been canceled without prejudice or disclaimer of subject matter. Claims 21-25 have been added. Claims 11, 16, 19, and 21-25 are independent.

Request for Interview

As an initial matter, Applicant hereby requests that, following the Examiner's review of this Response, the Examiner contact the undersigned attorney if there are any issues remaining, in order to schedule an interview in an effort to advance this application to issue.

The objections to claims 19 and 20

Turning to the Office Action, first, claims 19 and 20 were objected to because of the informalities noted at paragraphs 4 and 5 of the Office Action. Applicant has corrected the recitation of "turning of the locking piece" in claim 19 to --pivoting of the locking piece--. Further, while cancellation of claim 20 renders the objection to that claim moot, Applicant has of course carefully reviewed and amended claim 19 with special attention to the points raised in the Office Action regarding claim 20. Accordingly, withdrawal of this objection is respectfully requested.

The prior art rejections

Claims 11, 12, 14-17, 19, and 20 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 4,079,901 to Mayhew. Claims 13 and 18 were rejected under 35 U.S.C. § 103(a) as being obvious from Mayhew.

Applicants submit that independent claims 11, 16, 19, and 21-25, together with the claims dependent therefrom, are patentably distinct from the cited reference for at least the following reasons.

Claims 11 and 16

One notable feature of the method of claim 11 is reducing the damping force from maximum to minimum once a carriage has traveled a predetermined damping distance towards a releasing position. (A similar feature was formerly recited in now-canceled claim 12.) Nothing in Mayhew would teach or suggest this feature.

Mayhew, as understood by Applicant, relates to a launching apparatus for a flying device. In Mayhew a damping force is generated, but the magnitude thereof is not reduced after the launch from maximum to minimum once a carriage has traveled a predetermined damping distance towards a releasing position, as in claim 11. A similar feature is recited in claim 16.

In more detail, Mayhew discusses a damping device (82) which has a buffer (84) arranged in contact with an outer surface of a release hook (78). (See column 3, lines 20-23.) As shown in Figures 3 and 4 of Mayhew, the outer surface of the release hook (78) is curved and the radius of curvature is not constant, but, instead increases towards the outermost end of the hook. This means that, when the release hook (78) turns after the safety link (106) has been actuated, it at first causes a minor linear movement for the buffer (84) and the damping device

(82). When the turning angle of the release hook (78) becomes bigger, the outer surface portion provided with a greater radius presses the buffer (84) and the damping device (82). Thereby, the linear pressing movement of the damping device (82) increases in relation to the turning angle of the release hook (78). Furthermore, as shown in Figures 3 and 4 of Mayhew, and as mentioned in column 4, line 4, the damping device (82) is a hydraulic shock absorber. When a piston of such hydraulic shock absorber is pressed by means of the buffer (84), the piston initially moves towards a pressure space of the absorber relatively easily. However, the pressure in the pressure space of the absorber increases relative to the movement of the piston towards the pressure space, whereby the opposing force increases simultaneously.

Accordingly, in Mayhew, the turning of the release hook (78) causes increasing linear movement for the buffer (84) and for the piston of the damping device (82). The force opposing the linear movement of the piston of the damping device (82) increases in relation to linear movement of the buffer (84). Thus, due to these facts in Mayhew, the damping force is increasing after the launch, which is opposite to the present invention of claims 11 and 16.

With further regard to claim 16, another notable feature of claim 16 is that at least one takeoff damper is connected to the locking device by means of a joint. Support for this feature can be found in the present specification, e.g., in Fig. 4 (and in the original claim 20).[1] Nothing in Mayhew would teach or suggest this feature. In Mayhew, the damping device (82) is by means of a buffer (84) in contact with an outer surface of a latch hook (78).

For at least the foregoing reasons, claims 11 and 16 are seen to be clearly allowable over Mayhew.

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[1]It is of course to be understood that the references to various portions of the present application are by way of illustration and example only, and that the claims are not limited by the details shown in the portions referred to.

Claim 19

Claim 19 recites, *inter alia*, that: (1) the takeoff damper is a pressure medium cylinder, (2) the takeoff damper is connected to the locking piece by means of a first joint, and further to a body of the catapult by means of a second joint, (3) the shortest distance of a straight line passing through the first joint and the second joint is arranged to generate an effective distance, and (4) the pivoting of the locking piece after the launching moment is arranged to reduce the effective distance, the damping force also being arranged to decrease substantially in the same ratio. (Similar features were formerly recited in now-canceled claim 20.)

Mayhew does not teach or suggest such claimed features. In Mayhew, the damping device (82) must be arranged stationary in order to be capable of receiving the force transmitted by the buffer (84). If the damping device (82) were connected by a joint to the body of the catapult, the damping device could turn in an uncontrolled way. That is because there is only the buffer (48) in surface contact with the release hook (78) but not connected to it, and further because the turning of the release hook (78) causes not only the downwardly directed linear force, but also a sidewards force.

Furthermore, since in Mayhew the damping device (82) is not connected by means of joints to the release hook (78) and to the body, there is no claimed effective distance. Instead, in Mayhew the piston of the damping device is moving along a predetermined constant linear path, which is not changed in any way during the operation. Moreover, in Mayhew the damping force is increasing after the launch, as discussed above.

For at least the foregoing reasons, claim 19 is seen to be clearly allowable over Mayhew.

Claim 21

Claim 21 recites, *inter alia*: (1) reducing the magnitude of the damping force relative to the movement of the carriage, (2) reducing the damping force once the carriage has traveled a predetermined damping distance towards the releasing position, and (3) reducing the damping force from maximum to zero on the damping distance, which has a magnitude of between 150 and 500 mm.

As explained in connection with claims 11 and 16, in Mayhew the magnitude of the damping force is not reduced relative to the movement of the carriage, but, instead, is increased.

Further, the Examiner concedes, at page 8 of the Office Action (in connection with claim 13), that Mayhew "fails to teach that the magnitude of the damping distance is between 150 and 500 mm."

In prior art solutions, such as in Mayhew, the magnitude of the maximum damping distance can be only as great as the diameter of the anchoring pin (74). In Mayhew, the release hook (78) is not moved towards the launching direction during its turning movement, whereby it can influence to the carrier as long as the anchoring pin (74) is in contact with an upper surface of the release hook (78). Thereby, in Mayhew the damping distance is extremely short. On the other hand, it would not be obvious to dimension the diameter of the anchoring pin (74) to be 15 mm or greater.

The Examiner states, at page 8 of the Office Action, that "[t]here is no evidence of the criticality of the claimed range between 150 and 500 mm..." However, the claimed range is based on extensive tests that have been performed by the applicant. It has been found that the damping distance should be preferably between the claimed range in order to allow yields and

masses in a pulling member and structure of the catapult to be taken into consideration in the damping.

Applicant notes that MPEP 2142 provides, with respect to establishing a prima facie case of obviousness, that "[t]he key to supporting any rejection under rejection under 35 U.S.C. 103 is the clear articulation of the reason why the claimed invention would have been obvious." Further, MPEP 2143.03 provides that "All words in a claim must be considered in judging the patentability of that claim against the prior art." MPEP § 2143.03 (quoting *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)).

Applicant respectfully submits that the Examiner's assertions are merely conclusory; that is, the Examiner merely asserts that the range limitation "is considered optimization within the prior art conditions." This conclusory statement would not support a finding of *prima facie* obviousness, because it would not establish that the features of claim 21 are taught or suggested by the prior art, as the law requires.

> ... [R]ejections on obviousness cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. MPEP 2141.III, quoting *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 USPQ2d 1385, 1396 (2007).

For at least the foregoing reasons, claim 21 is seen to be clearly allowable over Mayhew.

Claim 22

One notable feature of claim 22 is dimensioning the maximum damping force on the basis of the magnitude of the launching force employed. Nothing in Mayhew would teach or suggest this feature.

At page 7 of the Office Action (in connection with claim 15), the Examiner refers to column 4, lines 31-45, and Figure 9 of Mayhew, and states that the above feature is disclosed. However, the cited text portion of Mayhew only refers to adjustment of a launching pressure so that the maximum launching acceleration is not exceeded. There is no mention in Mayhew of adjusting the maximum damping force on the basis of the magnitude of the launching force employed. This is logical since in Mayhew the damping device (82) is not adjustable in any way.

For at least the foregoing reasons, claim 22 is seen to be clearly allowable over Mayhew.

Claim 23

One notable feature of claim 23 is "at least one takeoff damper connected to the locking device by means of a joint." As explained above in connection with claim 16, Mayhew does not teach or suggest this feature, and therefore claim 23 is seen to be patentable over Mayhew for at least this reason.

Another notable feature of claim 23 is "the damping force is at its maximum at the launching moment and the damping force is arranged to decrease to zero after the carriage has moved a damping distance of a predetermined magnitude in the launching direction." As explained above in connection with claims 11 and 16, Mayhew does not teach or suggest this feature, and therefore claim 23 is seen to be patentable over Mayhew for at least this reason as well.

Another notable feature of claim 23 is "the magnitude of the damping force is arranged to decrease relative to a turning angle of the locking piece." Contrary to the Examiner's assertion (see page 5 of the Office Action in connection with claim 17), Mayhew does not teach or suggest this feature. Instead, in Mayhew the damping force increases as the turning angle of the release hook (78) increases. Therefore, claim 23 is seen to be patentable over Mayhew for at least this reason as well.

For at least the foregoing reasons, claim 23 is seen to be clearly allowable over Mayhew.

Claim 24

One notable feature of claim 24 is "at least one takeoff damper connected to the locking device by means of a joint." As explained above in connection with claim 16, Mayhew does not teach or suggest this feature, and therefore claim 24 is seen to be patentable over Mayhew for at least this reason.

Another notable feature of claim 24 is "the damping force is at its maximum at the launching moment and the damping force is arranged to decrease to zero after the carriage has moved a damping distance of a predetermined magnitude in the launching direction." As explained above in connection with claims 11 and 16, Mayhew does not teach or suggest this feature, and therefore claim 24 is seen to be patentable over Mayhew for at least this reason as well.

Another notable feature of claim 24 is that "the catapult comprises means for identifying the magnitude of the launching force and means for adjusting the damping force on the basis of the launching force." There is no mention or any teaching in Mayhew that the damping device (82) is adjustable. Nor is there any mention that the damping force should be adjusted on the basis of a launching force. Further, as even the Examiner concedes (see page 7 of the Office Action in connection with claim 18), Mayhew fails to disclose identifying the magnitude of the launching force.

For at least the foregoing reasons, claim 24 is seen to be clearly allowable over Mayhew.

Claim 25

One notable feature of claim 25 is "at least one takeoff damper connected to the locking device by means of a joint." As explained above in connection with claim 16, Mayhew does not teach or suggest this feature, and therefore claim 25 is seen to be patentable over Mayhew for at least this reason.

Another notable feature of claim 25 is "the damping force is at its maximum at the launching moment and the damping force is arranged to decrease to zero after the carriage has moved a damping distance of a predetermined magnitude in the launching direction." As explained above in connection with claims 11 and 16, Mayhew does not teach or suggest this feature, and therefore claim 25 is seen to be patentable over Mayhew for at least this reason as well.

Another notable feature of claim 25 is "the locking device and the takeoff damper are arranged under an uppermost surface of the elongated body of the catapult along which surface the carriage is arranged to be moved." Support for this feature can be found in the present application, e.g., in Fig. 4. Nothing in Mayhew would teach or suggest this feature. Specifically, by defining the position of the locking device and the takeoff damper, an additional difference is made relative to Mayhew, wherein a latching hook (78) and a damping device (82) are arranged above a body (16), as is shown in top plan views in Figures 2, 3, and 4. In Mayhew, forces acting in a side direction are generated during the launch because the locking device and the damper are acting in a sidewards direction. These harmful sideward forces can be avoided by arranging the locking device and the takeoff damper as recited in claim 25. Therefore, claim 25 is seen to be patentable over Mayhew for at least this reason as well.

For at least the foregoing reasons, claim 25 is seen to be clearly allowable over Mayhew.

Dependent Claims

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

For example, claim 14 recites reducing the magnitude of the damping force substantially linearly. As has been discussed above, in Mayhew the curvature of the outer surface of the release hook (78) is not constant, whereby the linear movement caused to the damping device (82) is not linear. Therefore, Mayhew fails to disclose the solution recited in claim 14.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Respectfully Submitted

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